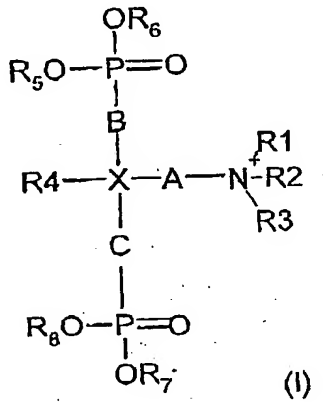
ART 19

MODIFIED CLAIM

Received by International Bureau on December 16, 2003
(16/12/2003)
Original claim 1 replaced by a modified claim 1 (1 sheet)

1. Medicine comprising the polyphosphonate compound with general formula I as active constituent:



(I)

in which:

1) R1, R2, R3, R5, R6, R7, R8 represent an atom of hydrogen or a C1 - C6 alkyl or aryl group, independently of each other;

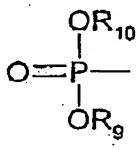
2) X is a carbon C atom or a nitrogen N atom;

3) A represents a C1 - C6 alkyl or aryl group, a carbonyl group or a hydrophilic group, B and C represent a chemical bond, a C1 - C6 alkyl or aryl group, a carbonyl group, or a hydrophilic group;

4) R4 represents:

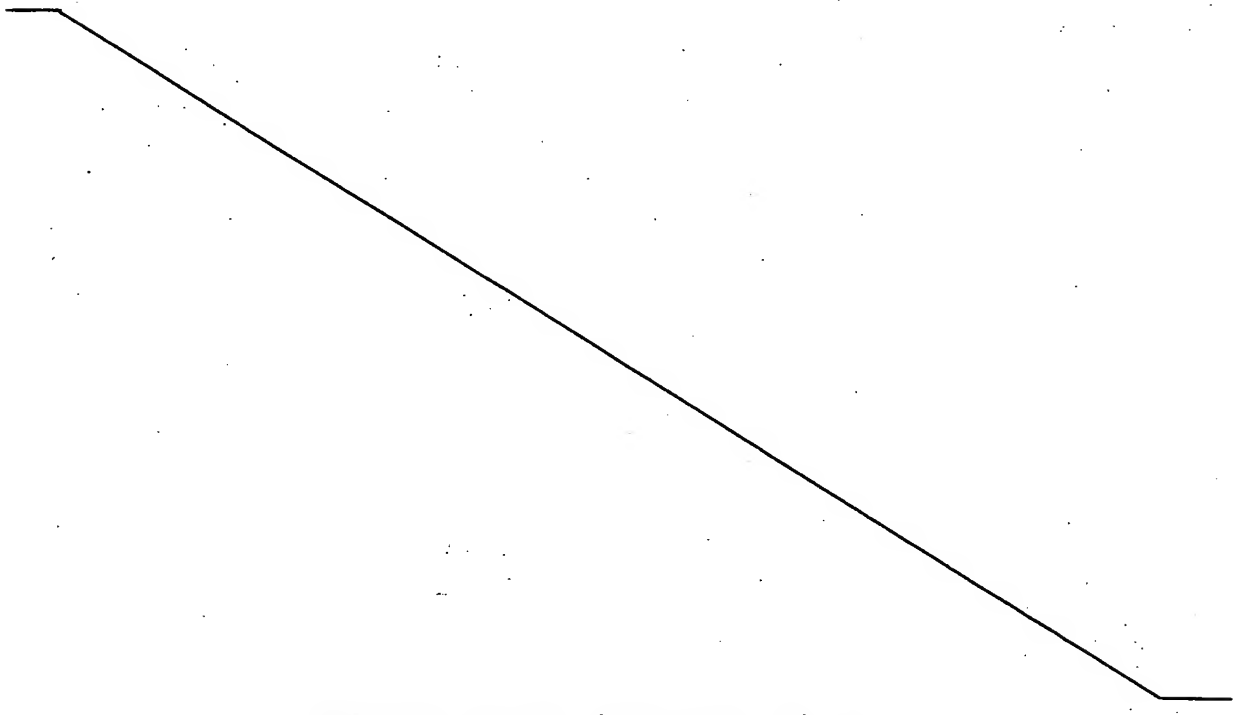
a) either a hydrogen atom, an OH group, a C1 - C6 alkyl or aryl group, or a C1 - C6 carboxylic acid, a free doublet (if X is a nitrogen N);

b) or a phosphonate with formula:



in which R9, R10 represent a hydrogen atom, or a C1 - C6 alkyl or aryl group, independently of each other;

c) or a quaternary ammonium group with formula



in which:

- R'1, R'2, R'3, R'5, R'6, R'7, R'8 represent an atom of hydrogen, or a C1 - C6 alkyl or aryl group, independently of each other;

- X' is a C atom or an N atom;

- A', B' and C' represent a chemical bond, a C1 - C6 alkyl or aryl group, a carbonyl group, or a hydrophilic group;

- and R'4 represents a C1 - C6 alkyl or aryl group, or a C1 - C6 carboxylic acid;

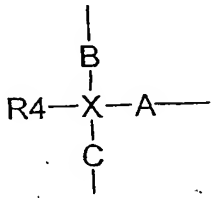
or a pharmaceutically acceptable salt of these polyphosphonate compounds with formula I or II,

except for 4-amino-1-hydroxybutilidene-1, 1-biphosphonic acid.

2. Medicine according to claim 1, characterised in that R1, R2, R3 are advantageously identical to each other and represent methyl or ethyl groups.

3. Medicine according to either claim 1 or 2, characterised in that R5, R6, R7, R8 are advantageously identical to each other and represent hydrogen atoms or methyl groups.

4. Medicine according to any one of claims 1 to 3, characterised in that the group



is advantageously a hydrophilic group of 1 to 6 carbon atoms.

5. Medicine according to any one of claims 1 to 4, characterised in that the hydrophilic group(s) is (are) typically chosen from among groups with formula -L-Q, in which L is a chemical bond or a C1 - C6 alkyl group, linear or ramified and Q is chosen from among:

a) a hydroxyl, amine, carboxyl, sulphate or phosphate group;

b) a linear or ramified C1 - C6 alkyl group containing one or several hydroxyl, amine, carboxyl, sulphate, phosphate groups;

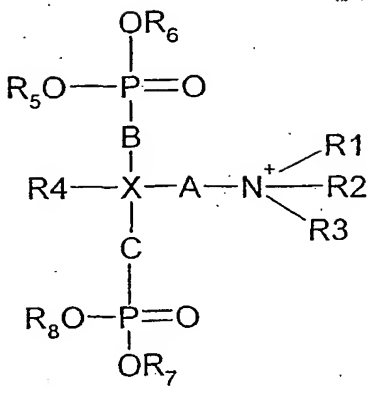
c) an M, OM, CONHM, NHCOM group in which M is a hydrophilic group;

d) a hydrophilic group according to points a), b) or c), protected by a group that becomes a hydrophilic group again after a biological hydrolysis.

6. Medicine according to any one of claims 1 to 6, characterised in that the compound with formula I comprises two phosphonic groups and one quaternary ammonium group.

7. 2,2-diphosphono-5-hydroxy-3-oxa-6-hexyltrimethylammonium chloride for use as a medicine.

8. Composition for mouth hygiene by topical method, characterised in that it comprises a polyphosphonate compound with the following formula I:



(I)

in which:

R1, R2, R3, R4, R5, R6, R7, R8, X, A, B and C are as defined in claim 1,

or one of its pharmaceutically acceptable salts,

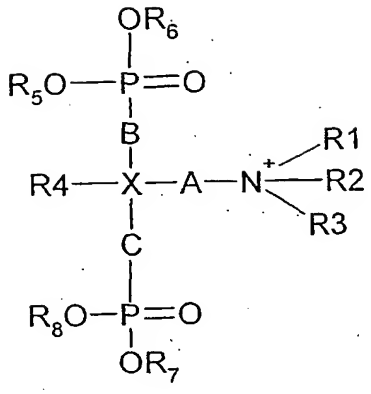
or a mix of such polyphosphonate compounds.

9. Composition according to claim 8, characterised in that it comprises between 0.01 and 20%, advantageously between 0.05 and 5%, and even better between about 0.1 and 2% by weight of compound I.

10. Composition according to either claim 8 or 9, characterised in that it also comprises at least one of the elements chosen from among an antibacterial agent, polishing agent, thickening agent, moisturising agent, aroma, sweetening agent, bleaching agent.

11. Composition according to any one of claims 8 to 10, characterised in that it is in the form of a mouthwash, a spray liquid, a toothpaste, a tooth gel.

12. Use of a polyphosphonate compound with formula I:



(I)

in which R1, R2, R3, R4, R5, R6, R7, R8, X, A, B and C are as defined in claim 1,

or one of its pharmaceutically acceptable salts,

for making a medicine intended to inhibit the appearance and development of dental plaque.

13. Use according to claim 12, characterised in that the compound I is chosen from among:

- 2,2-diphosphono-5-hydroxy-3-oxa-6-hexyltrimethylammonium chloride and,
- 6-trimethylammoniohexyl-1,1-bisphosphonic acid.